AUSTRALIAN CUMACEA. No. 17[1]

THE FAMILY DIASTYLIDAE (Cont.)[2]

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Fig. 1–10.

THE few Diastylids herein dealt with are from Western Australia. Four species have been recorded from the Indian Ocean coast; eleven are added, together with two (*Gynodiastylis vicaria* and *Dicoides occidentalis* spp. nov.) from the south coast.

The Diastylids which can be listed now for Western Australia are:

Leptostylis vercoi Hale.
Paradiastylis mollis Hale.
Paradiastylis whitleyi sp. nov.
Dimorphostylis australis Foxon
Dimorphostylis cottoni Hale.
Dimorphostylis victa Hale.
Anchistylis waitei (Hale).
Gynodiastylis hartmeyeri Zimmer.
Gynodiastylis similis Zimmer.
Gynodiastylis bicristata Calman.
Gynodiastylis lata Hale.
Gynodiastylis turgida Hale.
Gynodiastylis munda sp. nov.
Gynodiastylis vicaria sp. nov.
Gynodiastylis inepta sp. nov.
Dicoides occidentalis sp. nov.
Zimmeriana lasiodactyla (Zimmer).

As with the Australian species of *Campylaspis*, very few species of *Gynodiastylis* and related genera have hitherto been taken by submarine light, perhaps because this method of collecting is almost untried on the silt grounds off New South Wales, where these genera are well represented. The Diastylids dealt with below were all attracted to submarine lights operated by Dr. A. G. Nicholls and Mr. G. P. Whitley.

Genus PARADIASTYLIS Calman 1904.

PARADIASTYLIS MOLLIS Hale.

Paradiastylis mollis Hale, 1945, p. 177, fig. 3–4.

This delicate species is apparently a northerly form insofar as Australia is concerned. It was described from the eastern coast, lat. 27.28 S.; G. P. Whitley, by means of a submarine light, Aug.–Dec., 1945, later secured females and juveniles from five localities on the northern part of the coast of Western Australia, ranging from Dampier Archipelago (20.27 S.) to Geraldton (28.45 S.).

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[1] For No. 16 see *Rec. S. Aust. Mus.*, ix, 1949, pp. 225–245, fig. 1–12.

[2] See also *Trans. Roy. Soc., S. Aust.*, 69 (2), 1945, pp. 173–211, fig. 1–26 and *Rec. S. Aust Mus.*, viii, 1946, pp. 357–444, fig. 1–60.

P. mollis resembles *brachyura* Calman (1904, p. 174, pl. v, fig. 76–90 and Hale, 1945, p. 177). Zimmer examined a much damaged female *Paradiastylis* from the Swan River, Western Australia and stated that it was allied to *brachyura* (see Zimmer, 1914, p. 187).

PARADIASTYLIS WHITLEYI sp. nov.

Adult male. Integument membranous, shining, semi-transparent.

Carapace with shallow pitting but no apparent ridges; it is barely wider than deep and is about twice as long as greatest breadth, which occurs about region of ocular lobe; it is considerably more than one-third of total length and twice as long as pedigerous somites together. Pseudorostrum one-fifth of length of carapace, acute in front. Ocular lobe large, a little wider than long and with tumid unpigmented lenses. No defined antero-lateral angle.

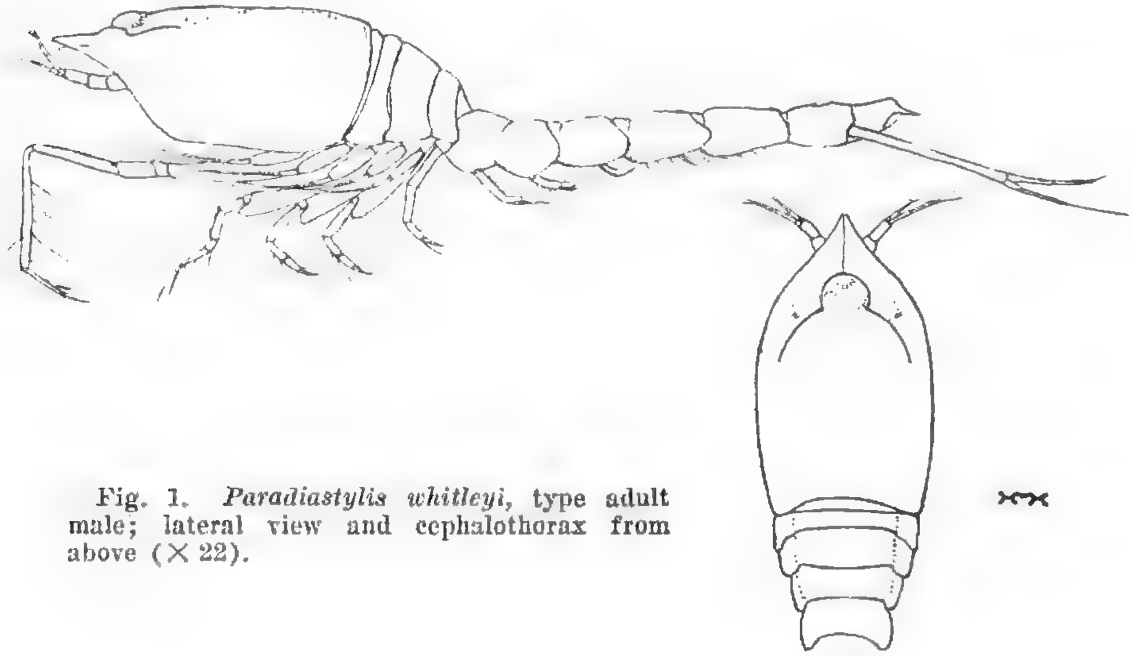

Fig. 1. *Paradiastylis whitleyi*, type adult male; lateral view and cephalothorax from above (× 22).

Pleon barely longer than cephalothorax; fifth somite nearly twice as long as wide and one-fifth as long again as either fourth or sixth, the latter somewhat dilated posteriorly; telson subcordate, with marked U-shaped dorsal depression; the very narrow post-anal part has a pair of apical spines and two pairs of lateral spines.

Third segment of first antenna more than half as long again as second; flagellum four-jointed, the second segment longest, and as long as second and third peduncular segments together; accessory lash four-jointed, the last segment minute, the third the longest.

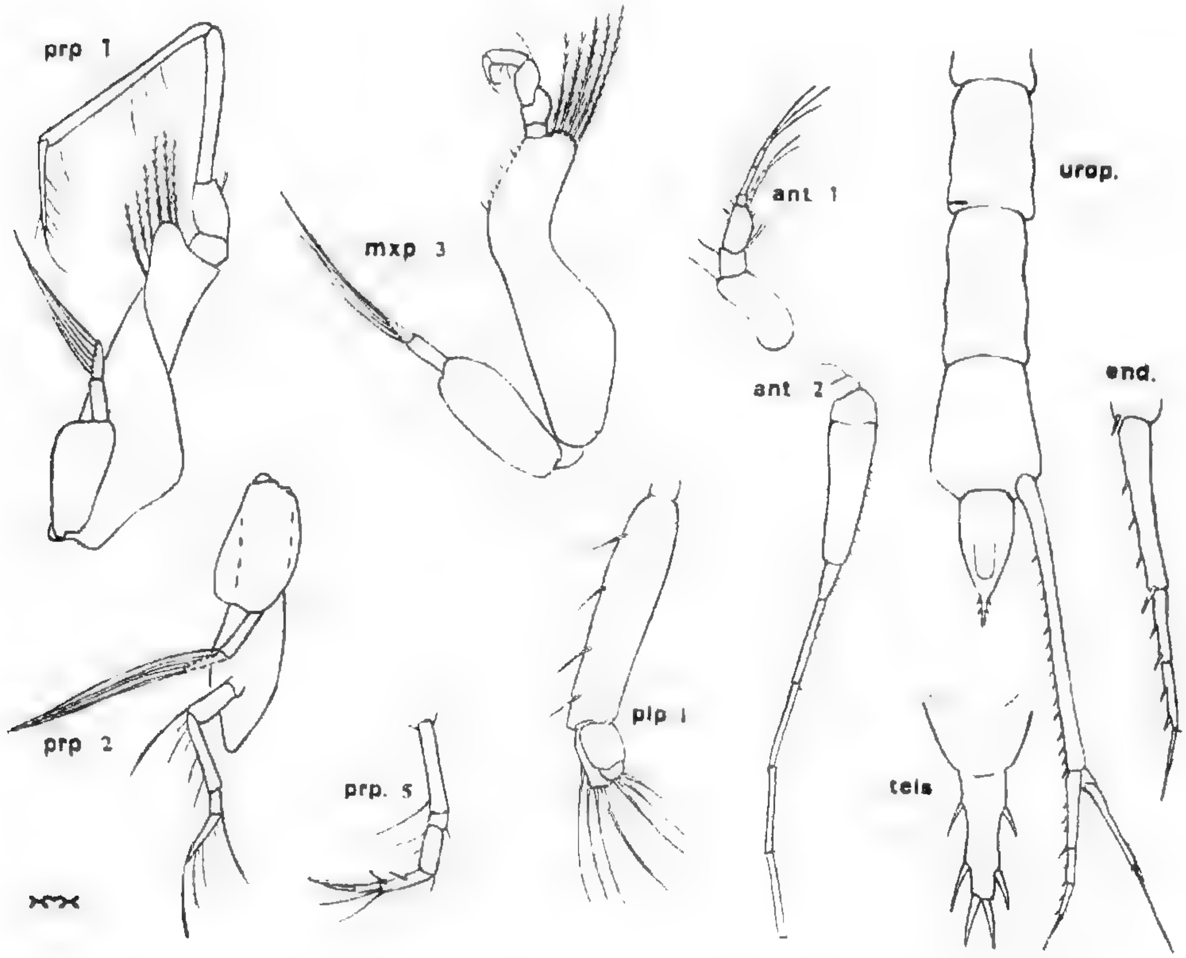

Fig. 2. *Paradiastylis whitleyi*, paratype adult male; ant. 1–2, first and second antennae; mxp. 3, third maxilliped; prp. 1, 2 and 5, first, second and fifth peraeopods; plp. 1, first pleopod; urop., uropod with fourth to sixth pleon somites and telson (all × 40); tels., distal end of telson (× 160); end., endopod of uropod (× 80).

Second antenna with flagellum reaching beyond distal end of peduncle of uropods; flagellum with very long joints (fig. 2, ant. 2).

Basis of third maxilliped more than twice as long as remaining joints together.

First peraeopod elongate, the carpus reaching to level of tip of pseudorostrum; basis about two-thirds as long as rest of limb; propodus barely one-third as long again as carpus and more than twice as long as dactylus.

Basis of second peraeopod longer than rest of limb; carpus as long as propodus and dactylus together and more than half as long again as merus.

Propodal and carpal setae of posterior peraeopods reaching to or barely beyond tip of dactylus.

Pleopods with endopod two-jointed and exopod undivided.

Uropod with peduncle more than twice as long as telson and armed on inner margin with fifteen spines; endopod (without terminal spine) half as long as peduncle and more than one-third as long again as exopod; it is three-jointed, the first segment fully twice as long as second, which is one-fourth as long again as third; the inner spines of the endopodal joints are four, two and two, and the terminal spine is as long as the third joint and much shorter than the longest terminal spine of exopod.

Length 4·0 mm.

Loc. Western Australia: Shark Bay, South Passage, 1½ fathoms, on sand (G. P. Whitley, ex cutter "Isobel," submarine light, Nov., 1945, temperature, 21·84° C.); Shark Bay, North end of Herald Bight, 3 fathoms, on sand (G. P. Whitley, ex cutter "Isobel," submarine light, Nov., 1945, temperature 24·22° C.). Houtman Abrolhos, Turtle Bay, East Wallabi Is., 2 fathoms, on sand (type loc., G. P. Whitley, ex cutter "Isobel," submarine light, Dec., 1945, temperature 21·70° C.). Type male in South Australian Museum, Reg. No. C. 3226.

Males only are available. The size varies little but some examples are just under 4 mm. in length. In the uropod the armature of the peduncle and first joint of the endopod is variable, there being sometimes seventeen spines on the inner margin of the peduncle and seven on the first endopodal joint. At Herald Bight in Shark Bay the species was taken in company with *Dimorphostylis australis*.

Admitting the species included by the writer (Hale, 1945, p. 179, *et. seq.*), *Dimorphostylis* is separable from *Paradiastylis* by a single female character and the species described above is placed tentatively in the older genus. In the latter it falls closest to *P. longipes* Calman (1905, p. 21, fig. 4); it differs in the absence of lateral ridges on the carapace and in the proportions of the uropods, in which the first joint of the endopod is longer than the second and third joints together, instead of about three-fourths of this length, as shown in Calman's fig. 41; in a single male recorded from New South Wales as *P. longipes* (Hale, 1945, p. 177) the first joint of the endopod is two-thirds as long as combined lengths of second and third joints.

If this Western Australian species proves to belong to *Dimorphostylis* (in which the third maxilliped of the female does not lack the exopod as in *Paradiastylis*) it most nearly resembles *D. cottoni* Hale, but lacks the lateral ridges of the carapace present in that species, in which also the first and second peraeopods are of different proportions and the first joint of the endopod is relatively much longer.

Genus DIMORPHOSTYLIS Zimmer 1921.

DIMORPHOSTYLIS AUSTRALIS Foxon.

Dimorphostylis australis Foxon, 1932, p. 390, fig. 7–8; Hale, 1945, p. 180, fig. 5–6 (male only).

On the evidence of the collecting carried out in Australian waters to date it would seem that this is a tropic species. Some specimens now in hand were taken by G. P. Whitley (submarine light, Nov., 1945) at four localities in Shark Bay, Western Australia, lat. 25.30 S., while on the east coast of Australia *D. australis* is known to occur only a little further to the south, but north to Low Isles, Queensland.

Foxon's specimens were preserved in formalin and consequently were in bad condition when examined by him. A series taken at Broadhurst Bight, Shark Bay, by Whitley comprises over one hundred adult males and three ovigerous females, so that the description of the last-named sex may now be supplemented.

Ovigerous female. Carapace one-third of total length of animal and more than twice as long as pedigerous somites together.

Pleon longer than cephalothorax by about one-third of length of telson; telson almost half as long as rest of pleon, and with short terminal spines as in male.

Third segment of peduncle of first antenna nearly half as long again as second.

First peraeopod with carpus reaching to level of tip of pseudorostrum; propodus about one-fourth as long again as carpus and more than twice as long as dactylus.

Peduncle of uropod about one-fourth as long again as telson, with much fewer spines (less than ten) than in male; first joint of endopod little longer than second and third joints together; inner spines of endopod two plus one plus one.

Length 4·1 mm. Ova 0·15 mm.

DIMORPHOSTYLIS COTTONI Hale.

Dimorphostylis cottoni Hale, 1936, p. 400, fig. 5–6 and 1945, p. 197, fig. 17–18.

This species was previously recorded from southern and eastern Australia, north to lat. 32.0 S.; specimens have since been collected by A. G. Nicholls in Western Australia at Esperance Bay (south coast) and Garden Island on the west coast (lat. 32.8 S.). It is not represented in any of the collections made further north.

DIMORPHOSTYLIS VIETA Hale.

Pachystylis vieta Hale, 1936a, p. 424, fig. 14–15 and 1937, p. 72.

Dimorphystylis vieta Hale, 1945, p. 192, fig. 13–14.

A single female was taken by G. P. Whitley at Garden Island, Western Australia, thus extending the known distribution of this easily recognized form.

Genus ANCHISTYLIS Hale 1945.

ANCHISTYLIS WAITEI Hale.

Anchicolorus waitei Hale, 1928, p. 45, fig. 15–16 and 1936, p. 418.

Colurostylis waitei Zimmer, 1930, p. 651.

Anchistylis waitei Hale, 1945, p. 204, fig. 21–22 and 24.

Specimens have been collected by A. G. Nicholls and G. P. Whitley from a number of Western Australian localities—Esperance Bay on the south coast and on the western shores at Garden and Rottnest Islands, and at Houtman Abrolhos.

In this series both adult males and ovigerous females vary in total length from 2·5–4 mm., the size having no apparent relation to locality; it should be mentioned, however, that all material was secured by submarine light.

The species was known previously only from the southern coasts of Australia.

Genus GYNODIASTYLIS Calman 1911.

GYNODIASTYLIS BICRISTATA Calman.

Gynodiastylis bicristata Calman, 1911, p. 374, pl. XXXVI, fig. 11–22.

Calman's types were from the Gulf of Siam and Japan. Two ovigerous females and a male taken by G. P. Whitley on the eastern shore of North-West Cape, Western Australia, are referred here.

They are somewhat smaller than Calman's specimens, the male being 1·45 mm. in length, the females 1·6 mm.

GYNODIASTYLIS LATA Hale.

Gynodiastylis lata Hale, 1946, p. 366, fig. 5–6.

The type series was taken at Moreton Bay, Queensland. G. P. Whitley secured a single example at the Mary Anne Group, North-Western Australia, in 3½ fathoms.

GYNODIASTYLIS TURGIDA Hale.

Gynodiastylis turgida Hale, 1928, p. 42, fig. 11–12 and 1936, p. 420, fig. 10–11.

A single male was taken by A. G. Nicholls at Careening Bay, Garden Island, Western Australia, in 3 fathoms by submarine light. The species was formerly recorded only from South Australia.

GYNODIASTYLIS HARTMEYERI Zimmer.

Gynodiastylis hartmeyeri Zimmer, 1914, p. 187, fig. 14.

The type locality is Shark Bay, Western Australia. A subadult female, 1·7 mm. in length, was collected by G. P. Whitley at Airlie Island, off Onslow (submarine light, 3 fathoms, rock, coral and sand bottom, Sept., 1945). In this example the first peraeopod is a little longer than indicated in Zimmer's figure, the carpus reaching to level of apex of pseudorostrum.

As shown in Zimmer's fig. 14c, the distal half of the telson is subtriangular as seen from above, not rounded as in the related *similis*.

GYNODIASTYLIS MUNDA sp. nov.

Female with developing marsupium. Integument fragile, dull opaque; sides of carapace and pedigerous somites with faintly marked large reticulate patterning.

Carapace less than one-third of total length of animal, subtriangular in shape when viewed from above, wider than deep, its proximal breadth being not much less than its length; back with a finely crenulate longitudinal ridge on each side, extending from tip of pseudorostral lobe almost to hinder margin, where it is connected with its fellow by a low transverse ridge; dorsum between carinae slightly convex; the sides are almost flat but not at all concave. Antero-lateral margin a little concave; antennal angle prominent, subacute and armed with one or two denticles.

Pseudorostrum narrowly truncate in front, the lobes meeting for a distance equal to two-ninths of length of carapace. Frontal lobe large; ocular lobe short and wide (four times as broad as long) and with no apparent eyes.

Pedigerous somites together four-fifths as long as carapace; pleural parts of all exposed, those of third greatly expanded fore and aft, generously overlapping second somite in front; dorsal length of fourth greater than in any of the others, and in fact equal to dorsal length of first three somites together; each of the second to fifth somites bears a pair of longitudinal dorsal carinae.

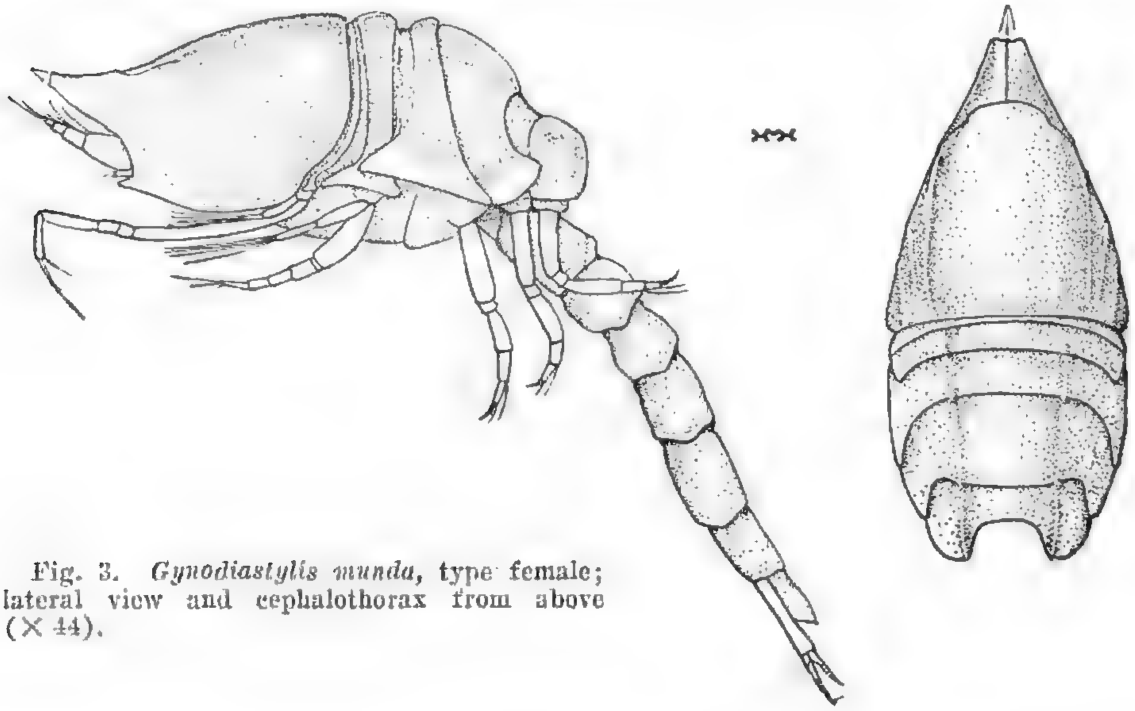

Fig. 3. *Gynodiastylis munda,* type female; lateral view and cephalothorax from above (× 44).

Pleon not quite as long as cephalothorax; first to fourth and sixth somites subequal in length; fifth somite distinctly less than half as long again as sixth, which is more than one-third as wide again as long, not greatly widened posteriorly; telson about three-fourths as long as sixth somite, subcordate as seen from above, its post-anal part very short and with a pair of tiny, stout terminal spines, flanked on one side by a short bristle (fig. 4, tels.).

First antenna with peduncle unusually large for the genus, and flagella very short; first joint of peduncle almost globose and longer than the rest of the appendage; although prominent when the animal is seen from the side, the antennae are not visible in dorsal view.

First peraeopod slender, with carpus reaching to level of tip of pseudorostrum; basis not much shorter than remaining joints together; propodus about two-thirds as long as carpus, one-third as long again as dactylus, and about as long as its single distal seta; dactylus with a terminal seta as long as that of propodus; the exopod is small and, not including setae, only half as long as basis.

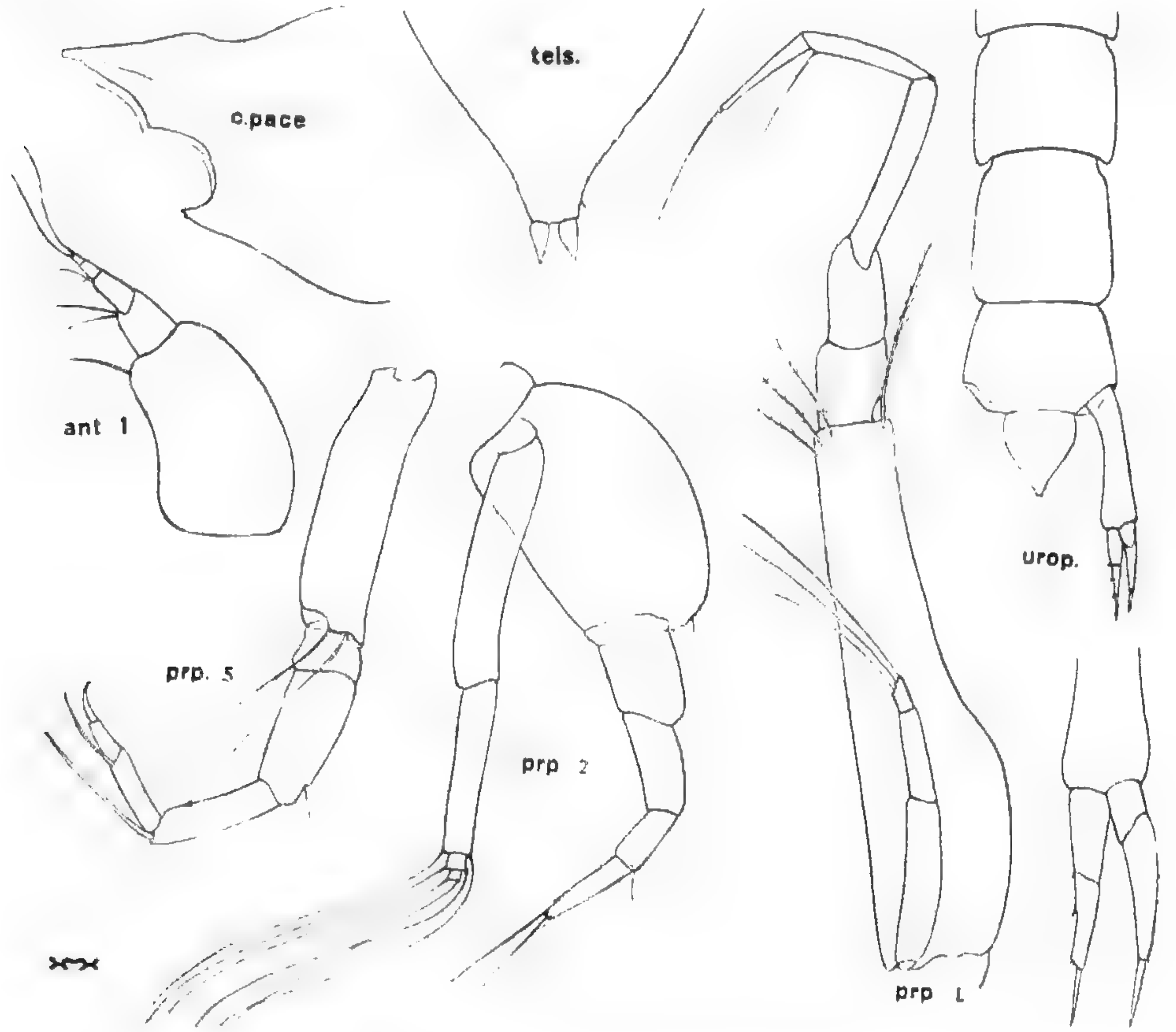

Fig. 4. *Gynodiastylis munda*, type female; c. pace, anterior part of carapace (× 70); ant. 1, first antenna (× 160): prp. 1, 2 and 5, first second and fifth peraeopods (× 160); urop., uropod with fourth to sixth pleon somites and telson (× 70; rami of uropod, × 160); tels., distal end of telson (× 420).

Second peraeopod with basis wide (breadth equal to two-thirds of length) and little more than three-fourths as long as remaining joints together; ischium distinct; merus, carpus and dactylus subequal in length, and propodus three-fourths as long as dactylus; exopod large, its peduncle and flagellum together as long as first four joints of the limb.

Basis in posterior peraeopods shorter than rest of limb; merus not much longer than carpus, the distal seta of which does not reach to tip of dactylus; propodal seta reaching almost to tip of dactylus, which is about as long as propodus.

Peduncle of uropod a little longer than telson and more than three-fourths as long again as the rami (exclusive of terminal spines); endopod barely longer than exopod, and divided into two segments of equal length, the inner margin of the first joint bearing a single minute spine at distal end, that of second a similar spine at middle of length and another alongside the stout terminal spine, which is less than one-third as long as the ramus; exopod with similar stout terminal spine.

Colour white. Length 2·5 mm.

Loc. Western Australia, Rottnest Island, 2¼ fathoms (A. G. Nicholls, submarine light, Nov., 1945). Type in South Australian Museum, Reg. No. C.3249.

This species resembles *concava* Hale (1946, p. 416, fig. 43–44) in some respects, but is easily separated by the following features. The sides of the carapace are flat but not concave, the pseudorostrum is not acute in front, while the dorsal ridges are subparallel, instead of divergent, and extend to the tip of the pseudorostrum. The sixth pleon somite is wider and the minute armature of the posterior end of the telson is different. The first antennae are much more massive. The second peraeopod has the terminal segments less abbreviated, the ischium is distinct and the exopod is much larger. In the uropod the endopod is divided into two equal joints as in *concava*, but the peduncle is relatively longer.

GYNODIASTYLIS VICARIA sp. nov.

Adult male. Integument semi-transparent, not much calcified and not brittle.

Carapace one-third of total length of animal, twice as long as pedigerous somites together, nearly twice as long as deep and barely wider than deep; on each side is a shallow depression, the lower edge of which is raised, forming the greater part of the lateral outline when the carapace is viewed from above. Pseudorostral lobes, as seen from the side, obliquely truncate in front; they meet above for a distance equal to one-fifth of length of carapace. Frontal and ocular lobes large, the latter twice as wide as long, with large eye lenses. Respiratory siphons slender.

Pedigerous somites all exposed, not at all crowded. Pleon as long as cephalothorax; sixth somite dilated at rear, where it is a little wider than long; telson equal in length to sixth somite and with a pair of slender apical spines.

Flagella of first antenna each three-jointed; the accessory lash is not much shorter than the main one, which is longer than second joint of peduncle. Second antenna with flagellum shorter than last segment of peduncle, seven-jointed and reaching only to middle of length of pedigerous somites.

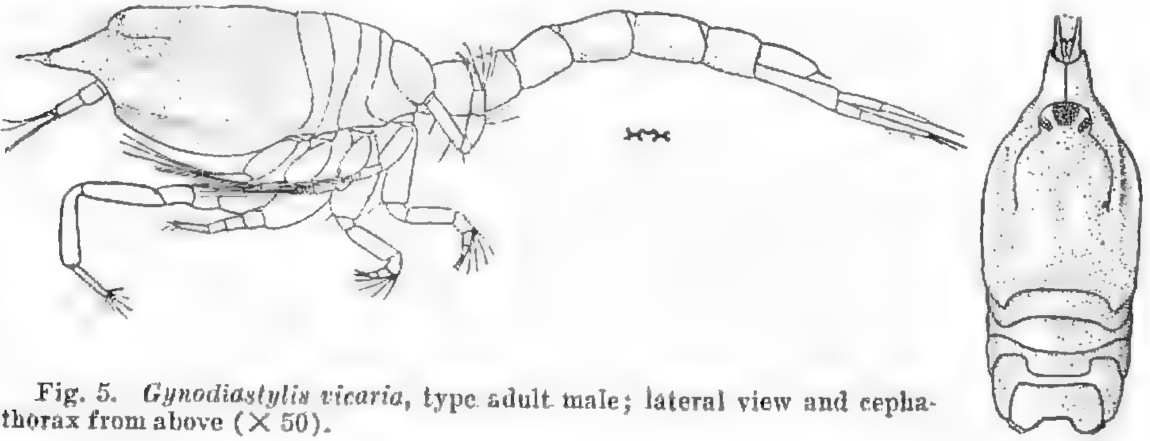

Fig. 5. *Gynodiastylis vicaria*, type adult male; lateral view and cephalothorax from above (× 50).

Exopods are present on the third maxilliped and first four pairs of peraeopods.

First peraeopod with basis more than half as long as rest of limb; propodus little longer than carpus, three-fifths as long as basis and with two insignificant distal setae; dactylus about half as long as carpus.

Second peraeopod with basis subequal in length to rest of limbs; merus, carpus and propodus all of about the same length, each two-thirds as long as dactylus.

Third to fifth peraeopods with merus as long as carpus, propodus and dactylus together; carpus with three slender distal setae, reaching to tip of the dactylus, the claw of which is slender.

Peduncle of uropod half as long again as telson; endopod, not including terminal spine, almost as long as peduncle, very little shorter than exopod, and with the first of its two segments a little shorter than second; the first endopodal joint has three spines on inner margin, the second four.

Length: 1·77 mm.

Loc. Western Australia: Esperance Bay (A. G. Nicholls, submarine light, Jan. 1946). Type in South Australian Museum, Reg. No. C. 3224.

In some respects this species is not typical of *Gynodiastylis*. The basis of the first peraeopod is relatively short for the genus, while in the propodus of this limb the distal setae are unusually short. It differs from *Zimmeriana* Hale, however, in the structure of the dactylus of the first leg, while in *Dicoides* Hale the anterior peraeopod is more massive. The female will show whether or not the species is correctly referred. In *Gynodiastylis* it comes closest to *tumida* Hale but in the first peraeopod of *vicaria* the carpus is not shorter than the propodus and in the second is subequal in length to the propodus, instead of more than twice as long as it. Further, the proportions of the distal joints of the posterior peraeopods are considerably different, while the endopod of the uropod is longer in relation to the peduncle. The sculpture of the carapace in *tumida* is variable.

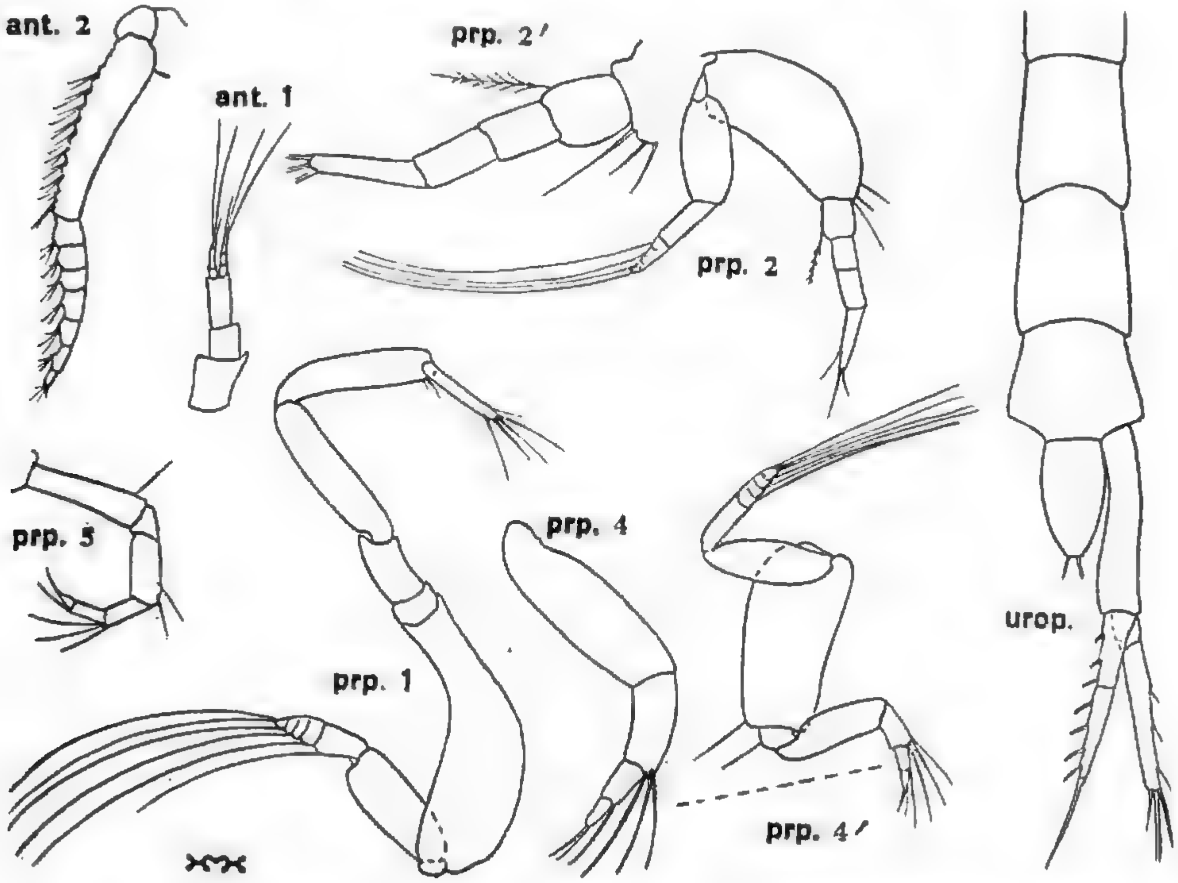

Fig. 6. *Gynodiastylis vicaria*, type adult male; ant. 1–2, first and second antennae; prp. 1, 2, 4' and 5, first, second, fourth and fifth peraeopods; urop., uropod with fourth to sixth pleon somites and telson (× 80); prp. 2' and prp. 4, distal segments of second and fourth peraeopods (× 160).

GYNODIASTYLIS INEPTA sp. nov.

Adult male. Integument semi-transparent.

Carapace one-third of total length of animal, somewhat inflated, wider than deep and breadth equal to length without pseudorostrum; antennal notch shallowly concave and antennal angle broadly rounded; on each side a low fold extends back from neighbourhood of antennal notch and below this is another longitudinal fold, the surface between being concave; the antero-lateral margin of the carapace flares outwards and is visible when the animal is viewed from above. Pseudorostrum nearly one-fourth of length of carapace, pointed in front when seen from the side but each lobe narrowly and obliquely truncate anteriorly in dorsal view. Frontal lobe large and ocular lobe broad and short, two and one-half times as wide as long; the eyes are large, bright and shining.

Pedigerous somites together much less than half as long as carapace; the first somite is visible as a narrow strip, the lateral parts concealed beneath carapace and pleural portions of the short second somite; the third is short dorsally but has the pleural part expanded a little fore and aft on each side; fourth somite the longest in dorsal length, its pleural parts, like those of fifth, directed slightly backwards.

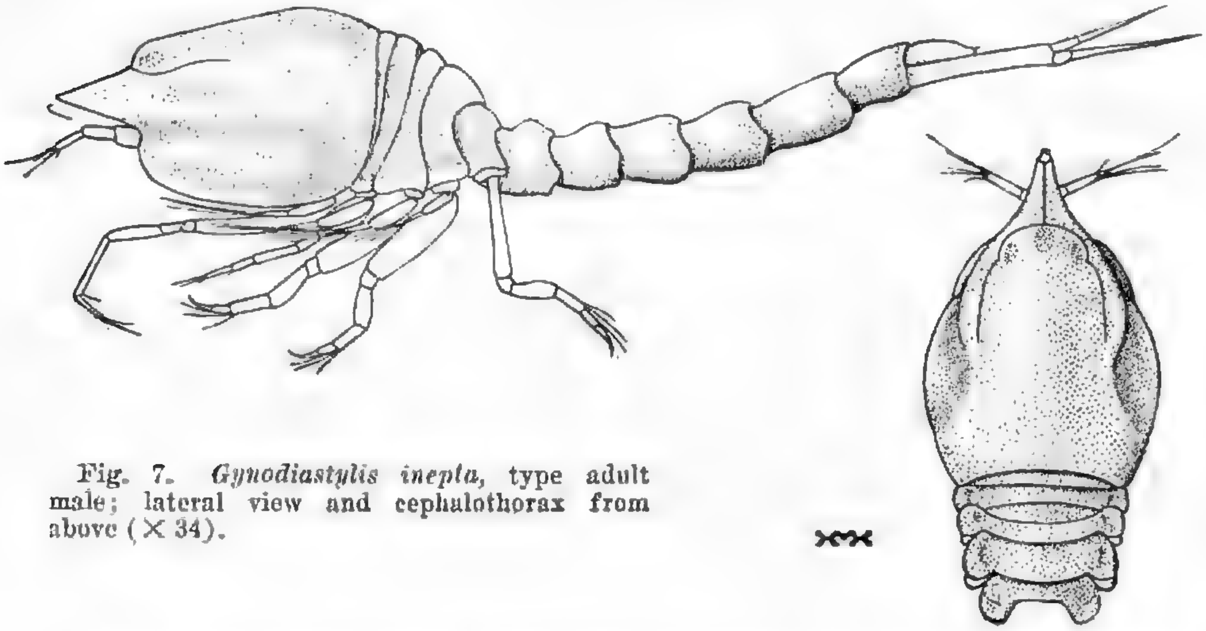

Fig. 7. *Gynodiastylis inepta*, type adult male; lateral view and cephalothorax from above (× 34).

Pleon a little longer than cephalothorax; fifth somite about one-fourth as long again as sixth, which is slightly dilated at the rear, where it is a little broader than length of the somite; telson not quite as long as sixth somite, almost twice as long as wide, and with a very short post-anal portion, narrowly subtruncate at distal end, which is furnished with a pair of short spines; the postero-lateral margins are finely serrate, with a bristle on each side near the terminal spines.

First antennae with second and third segments of peduncle subequal in length each a little longer than the stout first joint; the flagella do not differ much in length and each of them is three-jointed.

First peraeopod slender, the carpus not reaching to level of tip of pseudorostrum; basis shorter than remaining joints together; propodus a little longer than carpus and with a single distal seta; dactylus more than half as long as propodus; exopod rather small, with peduncle less than half as long as basis.

Second peraeopod with basis broad (three-fourths as wide as long) and not much longer than the three succeeding joints together; ischium distinct and carpus equal in length to propodus and dactylus together; the dactylus is three-fourths as long again as propodus and the exopod (not including flagellal setae) is fully as long as the basis.

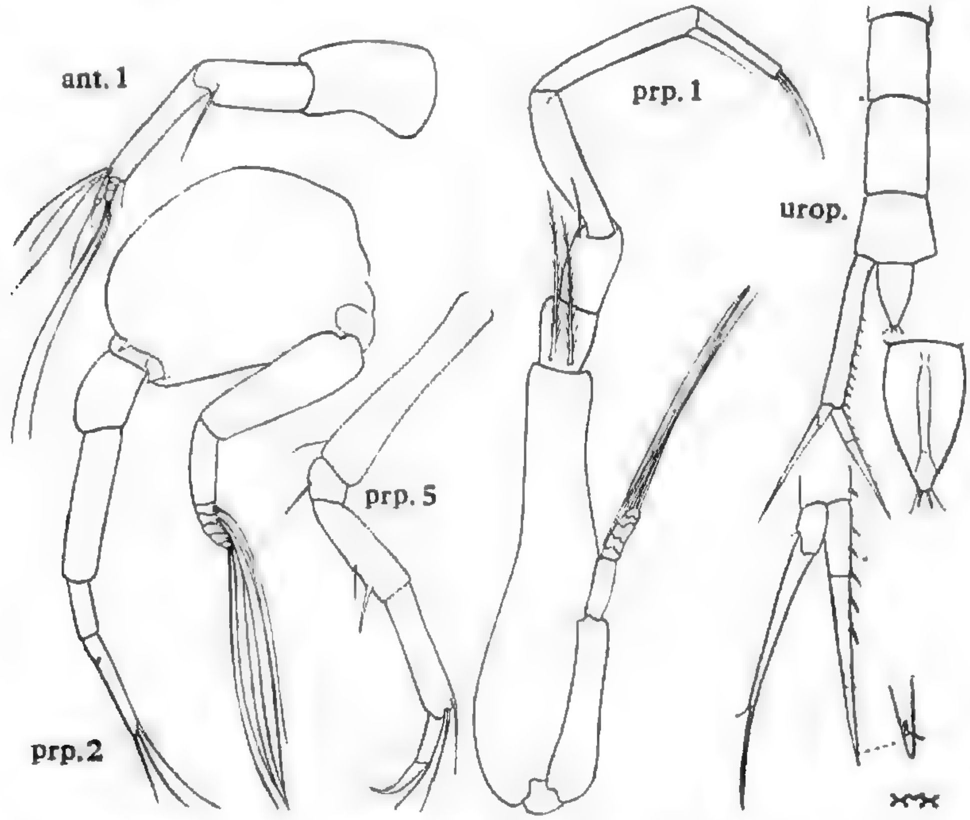

Fig. 8. *Gynodiastylis inepta*, paratype adult male; ant. 1, first antenna (× 95); prp. 1, 2 and 5, first, second and fifth peraeopods (× 95); urop., uropod with fourth to sixth pleon somites and telson (× 33; telson and rami of uropods, × 75).

Posterior peraeopods with carpus little longer than merus and with two carpal setae, the longer of which, like that of propodus, reaches to level of tip of dactylus; propodus and dactylus subequal in length, each much less than half as long as carpus; exopods on all but last pair, those of the fourth smaller than on the third; basis of fifth legs narrow, about as long as merus and carpus together.

Peduncle of uropod two and one-half times as long as telson, the distal two-thirds of inner margin armed with eight or nine short spines; endopod about four-fifths as long as peduncle, bisegmentate, the second joint almost half as long again as first; there are three spines on inner margin of first segment, one or two on second; the terminal spine is as long as the first segment, but is not distinctly marked off, and only with difficulty is its junction with the ramus discernible; the exopod (with terminal spine) is one-fifth as long again as the total length of endopod; its terminal spine is one-half as long as the ramus but not distinctly differentiated from it.

Length 2·9 mm.

Loc. Western Australia: Garden Island, Careening Bay, 3 fathoms (A. G. Nicholls, submarine light, Nov., 1946). Type male in South Australian Museum, Reg. No. C. 3262.

Two males are available. These have the general facies of the large-eyed male described for *Gynodiastylis dilatata* (Hale, 1946, p. 375)—an otherwise easily separated species. Allowing for possible differences apparent in large-eyed males of *Gynodiastylis* and allied genera, *inepta* most nearly resembles the variable *G. tumida* (Hale, 1937, p. 66, fig. 3–4 and 1946, p. 419, fig. 45). It is distinguished from the male of *tumida*, however, by the following features. The sixth pleon somite is less dilated at the rear and the telson has a shorter and less narrowed post-anal part. The longer carpal seta of the posterior peraeopods (although stouter than its fellow) is not so thickened. In the uropod the peduncle is longer (less than twice as long as telson in *tumida* and with fewer spines on inner margin) and the spine of the endopod is not sharply marked off from the ramus. Further, not including the terminal spine in the length of either ramus, the exopod of the uropod of *inepta* is unusual in that it is longer than the endopod, whereas in *tumida* it is the shorter of the rami.

Genus DICOIDES Hale 1946.

Dicoides Hale, 1946, p. 421.

DICOIDES OCCIDENTALIS sp. nov.

Adult male. Integument slightly calcified; pedigerous somites, pleon, distal segments of limbs, and uropod with imbricate surface patterning.

Carapace one-third of total length and two-thirds as long again as pedigerous somites together; it is as deep as broad and half as long again as wide; on each side is a shallow depression; the inferior margin in anterior half bends outwards and is a prominent feature of the outline when the carapace is viewed from above; below the ocular lobe is a low tumidity on each side and the branchial regions are somewhat swollen. Frontal lobe very broad; ocular lobe rounded anteriorly, more than twice as wide as long, half as wide as carapace and with three large pale eyes. Pseudorostral lobes obliquely truncate anteriorly when seen from the side, meeting above for a distance equal to length of ocular lobe. Antero-lateral angle sinuate.

Pleon equal in length to cephalothorax; fifth somite one-third as long again as sixth, which is slightly wider than long; telson little shorter than sixth somite, subtriangular and with two rather long terminal spines, each more than one-third as long as telson; no portion is post-anal.

First antenna geniculate; first segment of peduncle barely longer than third, and second much shorter; flagellum three-jointed, three-fourths as long as third peduncular segment; accessory lash two-jointed.

Second antenna reaching back little beyond hinder margin of carapace; its eleven-jointed flagellum is shorter than the peduncle.

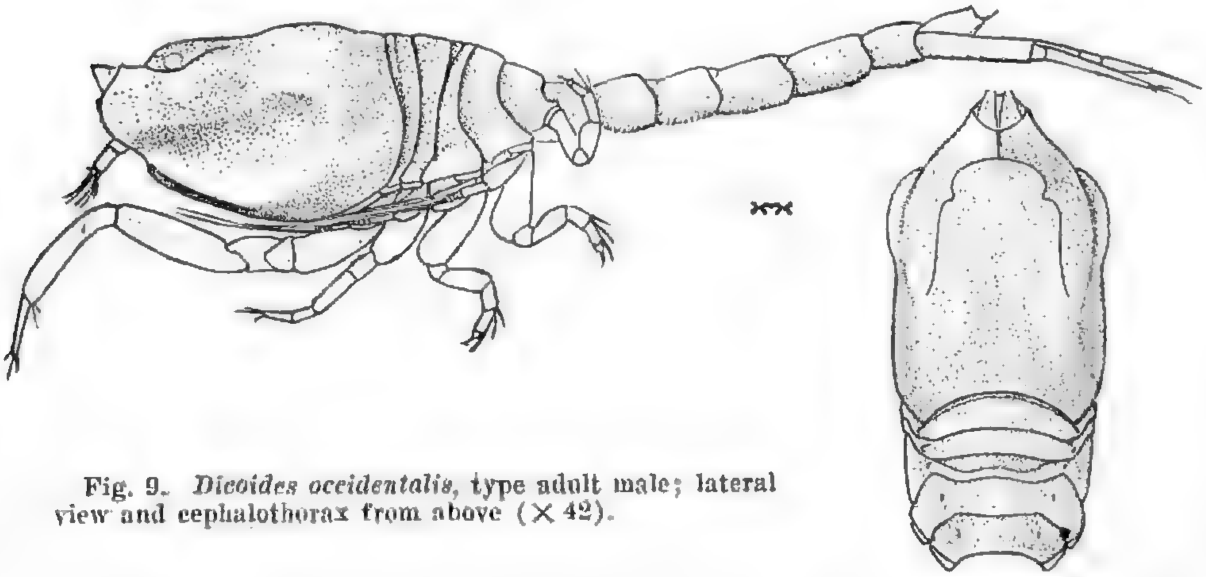

Fig. 9. *Dicoides occidentalis*, type adult male; lateral view and cephalothorax from above (× 42).

First to fourth pairs of peraeopods with well developed exopods. First pair with carpus reaching to level of anterior margin of carapace; basis short, two-fifths as long as rest of limb and equal in length to propodus, which is slightly shorter than the broad carpus; dactylus less than half as long as propodus, with a strong terminal claw (as in *D. fletti*) and some strong setae; there are no marginal setae on the carpus and propodus.

Second peraeopod with basis broad, much shorter than rest of limb; ischium indistinct and carpus as long as propodus and dactylus together.

Third and fourth peraeopods robust; basis broad, shorter than rest of limb; propodus longer than carpus and with a stout seta reaching to level of tip of the short and stout dactylus; two distal carpal setae, the longer not reaching beyond tip of dactylus.

Fifth peraeopod with basis much more slender than in fourth.

Uropod with peduncle two and one-half times as long as telson, and fully half as long again as fifth pleon somite; endopod six-sevenths as long as peduncle and equal in length to exopod; the first and last of its three indistinctly separated segments are subequal in length, each twice as long as second; inner margin with ten short spines and terminal spine stout, fully as long as last segment of the ramus; exopod with three very unequal terminal spines (the longest nearly one-half as long as the ramus) and with a few short spines on outer margin.

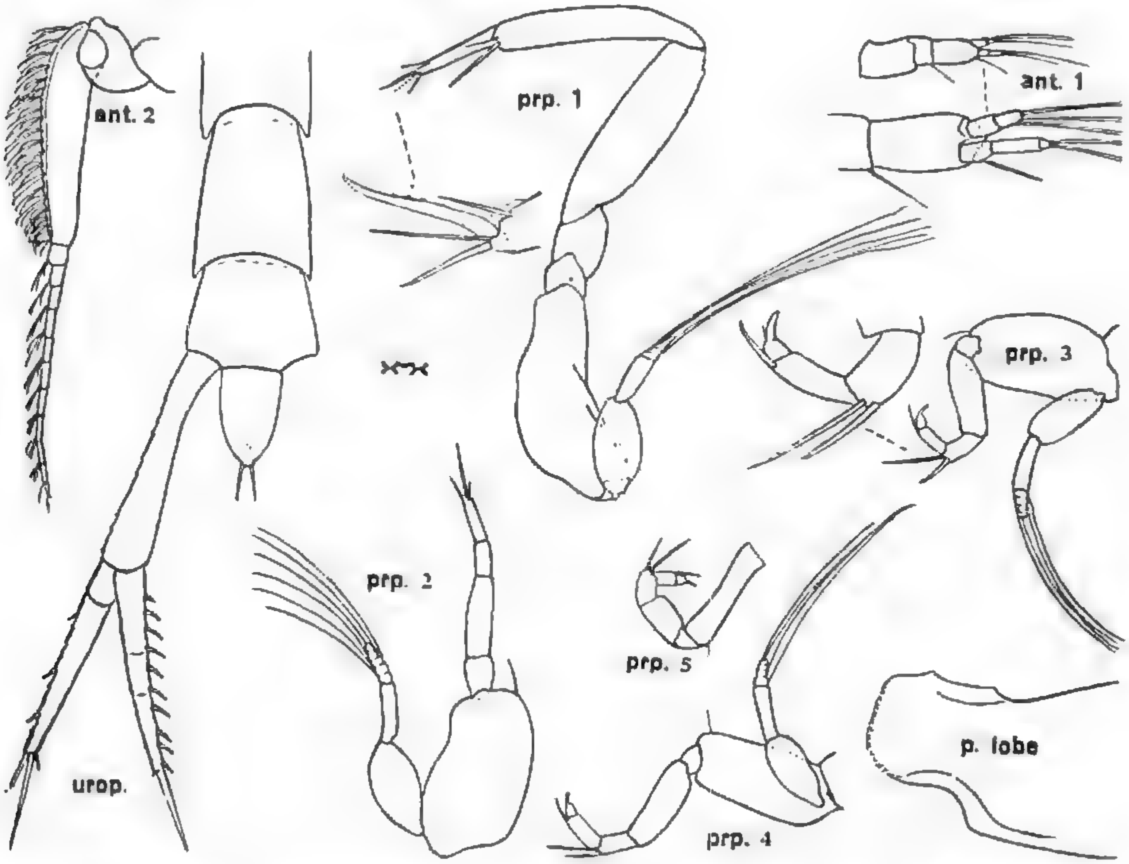

Fig. 10. *Dicoides occidentalis*, type adult male; p. lobe, inner view of right pseudorostral lobe; ant. 1–2, first and second antennae; prp. 1–5, first to fifth peraeopods; urop., uropod with fifth and sixth pleon somites and telson (× 64; flagella of first antenna, "claws" of first peraeopod and terminal joints of third peraeopod, × 180).

Colour cream. Length 2·2 mm.

Loc. Western Australia: Esperance Bay (A. G. Nicholls, submarine light, Jan., 1946). Type in South Australian Museum, Reg. No. C. 3223.

This species somewhat resembles *D. fletti* (Hale, 1946, p. 425, fig. 49–50) from the Pacific Coast of Australia. The size of the South-Western Australian form is considerably smaller and the shape and sculpture of the carapace are very different, although it must be remembered that the fully adult male of *fletti* is unknown. Further, however, the sixth pleon somite is relatively wider in *occidentalis*, the telson is longer, and the fossorial peraeopods are stouter and shorter, with the propodus relatively longer. Again, in the uropod the rami are of equal length and the second segment of the endopod is much shorter than the last; in the sub-adult male of *fletti* (4·6 mm.) the exopod of the uropod, as in the female, is distinctly shorter than the endopod, the segments of which are distinctly marked off, the second being not markedly shorter than third, and the armature is as figured for the female (Hale *ut supra*, fig. 50, urop.).

The first peraeopods of *occidentalis* are relatively shorter than in the adult male of *areolata* or the sub-adult male of *fletti* and *brevidactyla*: these appendages agree, however, in having the propodus as long as the basis. The terminal telsonic spines are not rudimentary as in the adult male of *areolata*, but this cannot be regarded as of much significance (Hale, 1946, p. 361).

SUMMARY.

Diastylidae from Western Australia are dealt with. Sixteen species are listed for the State, including five which are described as new. These are *Paradiastylis whitleyi*, *Gynodiastylis munda*, *G. vicaria*, *G. inepta* and *Dicoides occidentalis*.

REFERENCES CITED.

Calman, W. T. (1904): "Report on the Cumacea collected by Prof. Herdman, at Ceylon, in 1902." *Ceylon Pearl Oyster Fish.* 1904, Supp. Rep. xii, pp. 159–180, pl. i–v.

Calman, W. T. (1905): "The Marine Fauna of the West Coast of Ireland, part iv. Cumacea." *Sci. Invest. Fish. Ireland*, 1904, app. 1, pp. 3–52, pl. i–v.

Calman, W. T. (1911): "On New or Rare Crustacea of the Order Cumacea from the Collection of the Copenhagen Museum. Part ii. The Families Nannastacidae and Diastylidae." *Trans. Zool. Soc.*, xviii, pp. 341–398, pl. xxxii–xxxvii.

Foxon, G. E. H. (1932): *Great Barrier Reef Exped.*, 1928–29, *Sci. Rep.*, iv, No. 11, pp. 387–395, fig. 5–10.

Hale, Herbert M. (1928): "Australian Cumacea." *Trans. Roy. Soc. S. Austr.*, lii, pp. 31–48, fig. 1–17.

Hale, Herbert M. (1936): "Three New Cumacea from South Australia." *Rec. S. Aust. Mus.*, v, pp. 395–403, fig. 1–6.

Hale, Herbert M. (1936a): "Cumacea from a South Australian Reef." *Rec. S. Aust. Mus.*, v, pp. 404–438, fig. 1–23.

Hale, Herbert M. (1945): "The Family Diastylidae, Part 1." *Trans. Roy. Soc. S. Austr.*, 69, (2), pp. 173–211, fig. 1–26.

Hale, Herbert M. (1946): "The Family Diastylidae, Part 2." *Rec. S. Aust. Mus.*, viii, pp. 357–444, fig. 1–60.

Zimmer, Carl (1914): *Fauna Südwest Aust.*, v, Cumacea, pp. 175–195, fig. 1–18.